

Antibody to Fullerenes Binds Carbon Nanotubes

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Applications are being sought for fullerene-based compounds in fields as diverse as electronics and pharmacotherapeutics. With respect to the latter, it was of interest to determine whether the immune system would recognize fullerenes and produce specific antibodies. After immunization with a fullerene-protein conjugate, we isolated fullerene-specific antibodies. One of them was characterized as to its specificity and its structure and binding of fullerenes determined by x-ray crystallography. We could also demonstrate binding to the surface of carbon nanotubes immunochemically and by atomic force microscopy. Our findings bridge two disparate disciplines: electrical nanotechnology and monoclonal immunology had can have practical consequences such as use as probes of cell and membrane function.